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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/672,204

09/26/2003

Yigal Bejerano

Y. BEJARANO 2-48

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05/18/2006

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EXAMINER

URICK, MATTHEW T

ART UNIT

PAPER NUMBER

2113

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/672,204	BEJERANO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Matt Urick	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15-19 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-11 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

***Non-Final Official Action***

***Status of the Claims***

Claims 1-5, 8-12 are rejected under 35 USC 103

Claims 6, 7, 13, and 14 are objected to while containing allowable matter

Claims 15-19 are allowable

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cihula (United States Patent Application Publication 2002/0143914 A1) in view of Mauro (*Essential SNMP, First Edition*).

As per claim 1, Cihula discloses:

A system for monitoring link delays and faults in an IP network, comprising:  
a monitoring station identifier that computes a set of monitoring stations that covers links in at least a portion of said network (§ 34: monitoring agent); and

Cihula does not disclose:

a probe message identifier, coupled to said monitoring station identifier, that computes a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined.

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Cihula discloses that his monitoring agent may make use of Simple Network Management Protocol (SNMP) or any other network management protocol (§ 34) to monitor the network. SNMP contains means for polling remote devices and network connections for traffic problems and other issues (Mauro: "Polling and Thresholds" § 1). This polling method will easily perform the required monitoring as specified by Cihula. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate polling with SNMP into the monitoring agent system of Cihula, to monitor network traffic.

As per claim 2, Cihula discloses:

The system as recited in claim 1 wherein said set of monitoring stations is a minimal set (§ 34: where one monitoring agent is the minimal set).

As per claim 3, Cihula discloses:

The system as recited in claim 1 wherein said set of probe messages is a minimal set.

Cihula discloses that his monitoring agent may make use of Simple Network Management Protocol (SNMP) or any other network management protocol (§ 34) to monitor the network. SNMP contains means for polling remote devices and network connections for traffic problems and other issues (Mauro: "Polling and Thresholds" § 1). The user may specify the poll interval, taking into account such factors as bandwidth restrictions and importance of the components being polled (Mauro: "Polling and

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Thresholds" ¶ 7 - ¶ 8), so user decides the minimal set of polling messages. This polling method will easily perform the required monitoring as specified by Cihula. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate polling with SNMP into the monitoring agent system of Cihula, to monitor network traffic.

As per claim 4, Cihula discloses:

The system as recited in claim 1 wherein said set of monitoring stations covers links in an entirety of said network (¶ 34 monitoring agent monitors network 102).

As per claim 8, Cihula discloses:

A method of monitoring link delays and faults in an IP network, comprising:  
computing a set of monitoring stations that covers links in at least a portion of said network (¶ 34: monitoring agent); and  
computing a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined.

Cihula discloses that his monitoring agent may make use of Simple Network Management Protocol (SNMP) or any other network management protocol (¶ 34) to monitor the network. SNMP contains means for polling remote devices and network connections for traffic problems and other issues (Mauro: "Polling and Thresholds" ¶ 1). This polling method will easily perform the required monitoring as specified by Cihula. Therefore, it would have been obvious to one of ordinary skill in the art at the time of

invention to incorporate polling with SNMP into the monitoring agent system of Cihula, to monitor network traffic.

As per claim 9, Cihula discloses:

The method as recited in claim 8 wherein said set of monitoring stations is a minimal set (§ 34: where one monitoring agent is the minimal set).

As per claim 10, Cihula discloses:

The method as recited in claim 8 wherein said set of probe messages is a minimal set.

Cihula discloses that his monitoring agent may make use of Simple Network Management Protocol (SNMP) or any other network management protocol (§ 34) to monitor the network. SNMP contains means for polling remote devices and network connections for traffic problems and other issues (Mauro: "Polling and Thresholds" § 1). The user may specify the poll interval, taking into account such factors as bandwidth restrictions and importance of the components being polled (Mauro: "Polling and Thresholds" § 7 - § 8), so user decides the minimal set of polling messages. This polling method will easily perform the required monitoring as specified by Cihula. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate polling with SNMP into the monitoring agent system of Cihula, to monitor network traffic.

As per claim 11, Cihula discloses:

The method as recited in claim 8 wherein said set of monitoring stations covers links in an entirety of said network (¶ 34 monitoring agent monitors network 102).

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cihula (United States Patent Application Publication 2002/0143914 A1) in view of Mauro (*Essential SNMP, First Edition*) as applied above, and in further view of Perlman (*Interconnections: Bridges, Routers, Switches and Internetworking Protocols, Second Edition*).

As per claim 5, Cihula and Mauro fail to disclose:

The system as recited in claim 1 wherein said probe messages have a selected one of:

identical message costs, and

message costs that are based on a number of hops to be made by said probe messages.

Perlman discloses that network routers include a "time-to-live" (TTL) tag when sending packets across the network to prevent messages from being forwarded indefinitely (Perlman: "Hop Count" ¶ 4 - ¶ 6). Cihula discloses that his invention is implemented in a packetized network including routers (¶ 34), and Mauro discloses that SNMP polling can be used to poll routers (Mauro: "Polling and Thresholds" ¶ 7). If

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routers are used, they automatically attach the TTL tag to each message, including the polling messages, to ensure that messages are not infinitely forwarded across the network. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate TTL tags into the systems of Cihula and Mauro, to prevent indefinite message forwarding in the network.

As per claim 12, Cihula and Mauro fail to disclose:

The method as recited in claim 8 wherein said probe messages have a selected one of: identical message costs, and message costs that are based on a number of hops to be made by said probe messages.

Perlman discloses that network routers include a "time-to-live" (TTL) tag when sending packets across the network to prevent messages from being forwarded indefinitely (Perlman: "Hop Count" ¶ 4 - ¶ 6). Cihula discloses that his invention is implemented in a packetized network including routers (¶ 34), and Mauro discloses that SNMP polling can be used to poll routers (Mauro: "Polling and Thresholds" ¶ 7). If routers are used, they automatically attach the TTL tag to each message, including the polling messages, to ensure that messages are not infinitely forwarded across the network. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate TTL tags into the systems of Cihula and Mauro, to prevent indefinite message forwarding in the network.



***Allowable Matter***

Claims 6, 7, 13, and 14 are objected to while containing allowable matter.

Claims 6 and 7 state:

The system as recited in claim 1 wherein said monitoring station identifier employs polynomial-time approximation algorithms to compute said set of monitoring stations.

wherein said probe message identifier employs polynomial-time approximation algorithms to compute said set of probe messages.

Claims 13 and 14 state:

The method as recited in claim 8 wherein said computing a set of monitoring stations comprises employing polynomial-time approximation algorithms.

wherein said computing a set of probe messages comprises employing polynomial-time approximation algorithms.

Claims 15-19 were examined and considered allowable over the prior art. The method of using polynomial-time approximation algorithms to calculate a set of network monitoring stations and network probe messages is not taught explicitly or suggested by the teachings of Cihula, Perlman, or Mauro.

Claim 15 states:

A system for monitoring link delays and faults in an IP network, comprising:

a monitoring station identifier that employs polynomial-time approximation algorithms to compute a minimal set of monitoring stations that covers links in at least a portion of said network; and

a probe message identifier, coupled to said monitoring station identifier, that employs polynomial-time approximation algorithms to compute a minimal set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined.

Claim 16 states:

The system as recited in claim 15 wherein said set of monitoring stations covers links in an entirety of said network.

Claim 17 states:

The system as recited in claim 15 wherein said probe messages have a selected one of: identical message costs, and message costs that are based on a number of hops to be made by said probe messages.

Claim 18 states:

The system as recited in claim 15 wherein said minimal set of monitoring stations guarantees delay and fault monitoring of all active links in a presence of at most  $K-1$  failures.

Claim 19 states:

The system as recited in claim 15 wherein said minimal set of monitoring stations always covers said links in said at least said portion of said network.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt Urick whose telephone number is (571) 272-0805. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MTZ  
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Bryce P. Bonzo

**BRYCE P. BONZO  
PRIMARY EXAMINER**